

**WHAT IS CLAIMED IS:**

1. A data recording method for performing error correction encoding on input data for each encoding unit by use of a product code and recording said error-correction encoded data on at least one track of a recording medium in at least one encoding unit, comprising the steps of:

sequentially recording first sync-block on said at least one track, said first sync-block being constituted by adding an internal encoding parity to data string of said input data constituting an internal encoding calculation data stream; and

after said first sync-block is completely recorded, sequentially recording second sync-block, said second sync-block being constituted by adding the internal encoding parity to data string of an external encoding parity constituting the internal encoding calculation data stream.

2. The data recording method according to claim 1, wherein in each item of said error-correction encoded data recorded on said at least one track of the recording medium in at least one encoding unit, the external encoding parity is calculated with the calculation being divided into a plurality of parts.

3. A data recording apparatus for performing error correction encoding on input data for each encoding unit by use of a product code and recording said error-correction encoded data on at least one track of a recording medium in at least one encoding unit, said apparatus comprising:

external encoding parity calculator for calculating and obtaining an external encoding parity for each encoding unit from data string constituting an external encoding calculation data stream;

internal encoding parity calculator for calculating and obtaining an  
5 internal encoding parity for each encoding unit from data string constituting an internal encoding calculation data stream; and

recorder for recording first sync-block sequentially on at least one track, said first sync-block being constituted by adding an internal encoding parity obtained by the calculation of said internal encoding parity calculator to data  
10 string of said input data constituting an internal encoding calculation data stream, and for recording second sync-block sequentially after said first sync-block is completely recorded, said second sync-block being constituted by adding the internal encoding parity obtained by the calculation of said internal encoding parity calculator to data string of the external encoding parity obtained by the  
15 calculation of said external encoding parity calculator, said data string of the external encoding parity constituting the internal encoding calculation data stream.

4. The data recording apparatus according to claim 3, wherein  
20 error-correction encoded data in m pieces of encoding units (m is an integer of 2 or larger) is recorded on at least one track of said recording medium; and

wherein said external encoding parity calculator includes at least said m pieces of calculating apparatus for calculating an external encoding parity.

5. The data recording apparatus according to claim 3, wherein error-correction encoded data in  $m$  pieces of encoding units ( $m$  is an integer of 2 or larger) is recorded on at least one track of said recording medium;

wherein said external encoding parity calculator includes calculating  
5 apparatus in the number smaller than said  $m$  pieces; and

wherein in each of the  $m$  pieces of encoding units of said data, the external encoding parity is calculated with the calculation being divided into a plurality of parts.